IMMUNOLOGY-SEROLOGY

1	Course Title:	IMMUNOLOGY-SEROLOGY	
2	Course Code:	VET2015	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	2	
6	Semester:	3	
7	ECTS Credits Allocated:	3.00	
8	Theoretical (hour/week):	2.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	2	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. AYŞIN ŞEN	
15	Course Lecturers:	Doç. Dr. Esra Büyükcangaz	
16	Contact information of the Course Coordinator:	aysins@uludag.edu.tr 0224 294 1292 Uludağ Üniversitesi Veteriner Fakültesi Hayvan Hastanesi Mikrobiyoloji Anabilim Dalı,Görükle/Nilüfer,BURSA	
17	Website:	http://veteriner.uludag.edu.tr/bolumler/KlinikO/mikrobiyoloji_dersnotlari/html	
18	Objective of the Course:	To teach basic knowledge about structure and functions of immune system, acquired immune response, immunological defects and to teach serological techniques for diagnosis of bacterial and viral infections.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	To ability to comprehend basic knowledge about structure and functions of immune system
		2	To ability to comprehend major functions of humoral immunity and to understand its role in body's defence
		3	To ability to understand major functions of cell mediated immunity and to understand its role in body's defence
		4	To understand immunity to infectious agents in farm animals
		5	To ability to comprehend basic knowledge about immunological defects (for example autoimmunity, immunodeficiency)
		6	To ability to perform diagnostic tests based on immunological methods and to interpret their results
		7	To ability to use knowledge about immunology and serology in spesific condition of infectious disases
		8	To ability to crack the problems about individual or herd health in our country's livestock
		9	
		10	
21	Course Content:		
	Course Content:		

Week	Theoretical	Practice
1	Introduction to immunology, the body's defenses, innate immunity, acquired immunity, antigen, the factors that influence antigenicity, main antigenic molecules, microbial and non-microbial antigens	To introduce basic instruments, biological and chemical solutions, reagents used in serological tests
2	The cells of the immune system (myeloid system, macrophage, lymphocyte), receptor proteins on their surface and their roles for immune response	Blood sampling, collection of serum, serum preparation from plasma and using for serological tests
3	Primary and secondary lymphoid organs of the immune system, their structures and functions	Mechanisms of serological reactions
4	Immunoglobulins (antibodies), their structures, classes and functions, immunoglobulin variants, immunoglobulins of domestic animals, immunoglobulins serving as B-cell receptor	Dilutions in different proportions (1/2,1/5, 1/10), titration of antibody or antigen
5	Phagocytes, phagocytosis in macrophages and neutrophils, their importance for immune response	Precipitation tests; the use of gel diffusion technique in determining the relationship of two antigens, the use of agar-gel precipitation test in diagnosis of infections, assessment of results
6	MHC (the antigen-presenting receptors), the need for antigen processing, antigen-processing cells, processing of exogenous and endogenous antigens	Agglutination tests; the use of slide agglutination tests in diagnosis of infectious diseases and bacterial identification, assessment of results
7	Antibody-mediated immune response, the induction of antibody synthesis, B-cell	Agglutination tests; the use of tube agglutination test in diagnosis of infectious diseases, assessment of results
8	cytotoxicity, apoptosis, natural killer cell cytotoxicity, macrophage activation in cell-mediated immunity, immunological tolerance (self tolerance and tolerance to foreign molecules) and	Hemagglutination tests and detection of virus hemagglutination titer
9	Immunological tolerance (self tolerance and tolerance to foreign molecules) and	Hemagglutination tests and detection of virus
10	Importance of immunoglobulins (IgA and IgE)	The use hemagglutination-inhibition tests in diagnosis of
11	Development of the immune system in mammalian fetuses, immune response of	Other primary binding tests (Complement fixation and Coombs test)
12	placenta, transfer of immunity from mother to offspring	RIA)
	immunological defense mechanisms for bacterial infections, bacterial subversion of host defenses	
13	Viral antigens, resistance to viruses, immunological defense mechanisms for viral infections, viral subversion of host defenses	Assesment and evaluation of serological test results for diagnosis of infectious diseases and titration of antibody level after vaccination
14	Hypersensitivity reactions, types of hypersensitivity and their mechanisms, autoimmunity and pathogenesis of autoimmunity	Vaccination and vaccines; passive immunization, active immunization, administration of vaccines

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	11	3.00	33.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	1.00	1.00
Others	0	0.00	0.00
Final Exams	1	1.00	1.00
Total Work Load			91.00
Total work load / 30 hr			3.03
ECTS Credit of the Course			3.00

22	Textbooks, References and/or Other Materials:	Abbas AK, Lichtman AH,; Basic Immunology, Functions and Disorders of the Immune System, Saunders Comp., Philadelphia, 2004 Diker S,; İmmunoloji, Medisan Yayınevi, Ankara, 2005 Parham,P.; The Immune System, Second Edition, Garland Science, 2005. Playfair,J., Bancroft,G.; Infection and Immunity, Third Edition, Oxford Univ. Press, 2008. Pier, G.B., Lyczak, J.B., Wetzler, L.M.; Immunology, Infection and Immunity, ASM Press, 2004. Tizard, I.R.; Veterinary Immunoolgy An Introduction, Sixth Edition, W.B. Saunders Elsevier, 2009. Todd I, Spickett G,; Immunology, Lecture Notes, Blackwell Publishing, 2005 Sen A., Serology Laboratory Practical Notes, University of Bursa Uludağ Publishing, 2018 Sen A.,Veterinary Immunology, Second Edition, Dora Publishing, Bursa, 2019
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	30.00
Quiz	1	10.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	3	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

24 ECTS / WORK LOAD TABLE

25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	2	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	2	0	0	5	0	0	0	1	0	0	0	0	0	0	0	0
ÖK5	2	0	5	4	0	0	0	0	0	0	0	0	0	0	0	0

ÖK6	1	0	5	3	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	2	0	4	3	0	0	0	0	0	0	0	1	0	0	0	0
ÖK8	5	0	3	2	5	2	0	0	0	0	4	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**